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SCIENCE NEWS LETTER

TECHNOLOGY DEPT.

MAY 31 1946

THE WEEKLY SUMMARY OF CURRENT SCIENCE • MAY 25, 1946

No Housing Problem

See Page 328

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MEDICINE

Remedy for Hemophilia

Wartime research which gave us plasma, albumin and other useful substances from human blood may bring a remedy for "bleeder's disease."

➤ A REMEDY for hemophilia, hereditary disease whose victims are always in danger of bleeding to death from a slight cut or scratch, may be coming from wartime research that gave plasma, albumin and other useful substances from human blood.

Promising results in controlling hemorrhage in hemophiliacs with one of these substances were reported by Dr. George R. Minot and Dr. F. H. L. Taylor, of Harvard Medical School and Boston City Hospital, at the meeting of the American College of Physicians. A much greater trial with patients, they cautioned, will be necessary to determine the full usefulness of the material.

Hemophilia afflicts only men who inherit it through their mothers. Their blood lacks a substance necessary to make blood clot when it is shed. It is probable, the Boston physicians stated, that the antihemophilic property of normal plasma may be concentrated in a few milligrams of material. This might mean as small an amount as a pinch of salt. The material is a protein, known as globulin.

With the use of this material and another substance from blood, thrombin, patients with hemophilia can now have teeth pulled and other operations performed without danger of hemorrhage. Amputations and skin grafting have been done without serious complications. The thrombin, spread on or impregnated into sterile gauze, fibrin foams or absorbable cellulose, is applied directly to the bleeding point at operation. It clots blood in a matter of seconds.

An ultimate aim of the researchers is preparation of the antihemophilic material from normal plasma in a small enough volume so that hemophilia victims might use it prophylactically. They might be able to give themselves a daily dose, as diabetics take insulin, to keep their blood clotting at the normally rapid time. They would then be protected against serious hemorrhage in case of accidental injury, from the little bumps and bruises of everyday life to more severe ones.

Dr. Edwin J. Cohn, the Harvard chemist whose fundamental researches led to this and other developments in the use of blood substances, was awarded the John Phillips medal, highest award of the American College of Physicians.

Specific globulins which combine reversibly with iron and presumably transport it to the tissues of the body have been separated from other constituents of plasma, he reported. Other substances he has separated are globulins which dissolve water-insoluble fatty substances such as cholesterol in large amounts; fatty vitamins such as vitamin A and fatty hormones such as the female sex hormone, estrogen; and globulin enzymes which split proteins and other complex chemicals. Albumins separated from the blood have been found to combine selectively with organic metal complexes such as mercurials and the sulfa drugs as well as with water-insoluble organic molecules such as quinones and long-chain fatty acids.

A more exciting phase of study of disease and exploration of unknown territory in its treatment are opening to doctors as a result of these studies, Dr. Charles A. Janeway of Harvard pointed out.

Albumin, developed for treatment of shock during the war, has already proved extremely valuable, he reported, in treatment of all types of reduced protein in the blood but particularly in the acute form seen often in patients after operation, in diseases of the liver and in kidney disease.

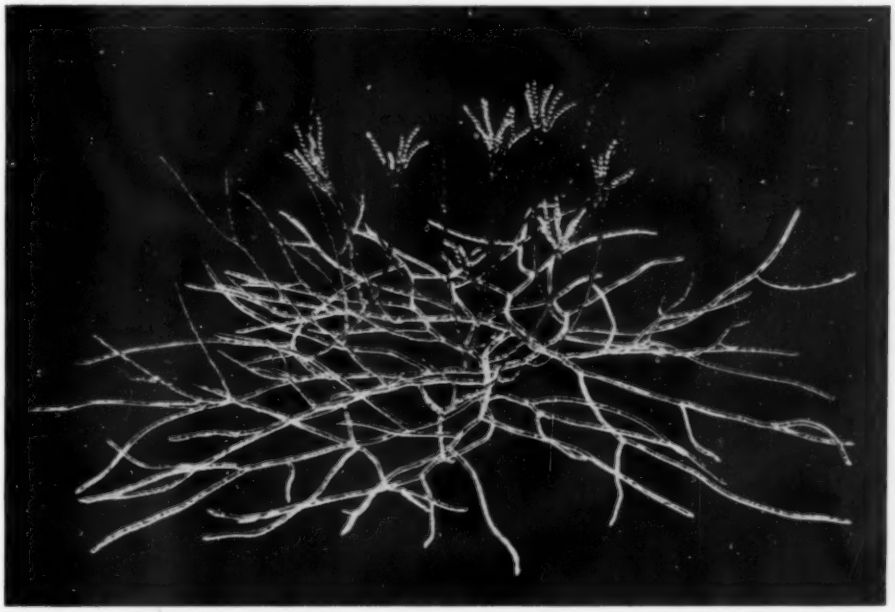
Science News Letter, May 25, 1946

MEDICINE

Weapon Against Botulism Forged Through Research

➤ A BETTER weapon against botulism, dangerous kind of food poisoning, can be forged as a result of biological warfare research carried out in greatest secrecy under the special projects division of the U. S. Army's Chemical Warfare Service.

The weapon would be a more effective toxoid providing better immunity to this disease. Such a weapon might have been



***PENICILLIUM MADE VISIBLE**—Model of a pinpoint fragment of the blue mold Penicillium notatum as seen magnified 400 times under the microscope. Note the spores on the upright filaments—it is these which impart the blue color to the fungus organism from which Sir Alexander Fleming first extracted the antibiotic substance. Photograph from the Chicago Natural History Museum Bulletin.*

needed for defending our troops if the enemy had used botulinus organisms in germ warfare against us.

Steps toward developing this defensive toxoid are reported by Dr. Carl Lamanna, Lt. (j.g.) Olive E. McElroy and Ensign Henning W. Eklund. (*Science*, May 17).

Pure white needle-shaped crystals of what is probably the most poisonous known substance per unit of weight were obtained by this group of scientists striving to build our defense against possible germ warfare, or "B.W." (biological warfare) as the scientists term it.

On the basis of the amount the scientists found would kill a mouse, Dr. Lamanna estimated that the killing dose for a 165-pound man would be roughly 0.15 gamma. A gamma is a millionth of a gram and it takes almost 30 grams to make one ounce. The material has about the density of water, but the killing dose would not approach in size even a single drop of water and is too small to be seen by the unaided eye.

This very deadly material is a protein chemical and is believed the pure toxin which causes a severe botulinus food poisoning. To obtain it, the scientists developed a complicated, eight-step method of separation, purification and crystallization.

Science News Letter, May 25, 1946

ELECTRONICS

Peacetime Sofar

Will save lives of civilians ditched or wrecked on across-the-ocean trips by locating exactly the position of the plane or life raft.

➤ THE WAR-DEVELOPED SOFAR system of determining the exact location of a ditched plane or life raft in the open sea will soon play an important part in saving civilians ditched or wrecked on across-the-ocean trips. How the system works was explained by three scientists largely responsible for its development. Stations to cover the California-Hawaii air route will be installed this year.

These scientists are Commodore J. B. Dow and Lt. Comdr. Walter Sands of the Bureau of Ships, U. S. Navy, and Dr. Maurice Ewing of Columbia University, who during the war was director of research in physics for the Woods Hole Oceanographic Institution, Massachusetts. All three were guests of Watson Davis, director of Science Service, on Adventures in Science, heard over the network of the Columbia Broadcasting System.

The SOFAR system, explained Commodore Dow, will make it possible to locate exactly the position of a ditched plane or life raft in the open sea by having three or more shore stations listen with hydrophones for the explosion of a light-weight underwater bomb dropped by the castaways.

In case of a crash, the plane will release one of these bombs either before it ditches, or afterward, and the bomb will sink to a required depth where it is exploded by pressure, Lt. Comdr. Sands added. Each of the shore stations will detect the incoming signal, both over loudspeakers and visually on recorder tape.

The recorder tape will also have second intervals marked on it so that each station will determine the exact time the explosion sound arrived. Each station will then radio the information to a central point at which, by reference to special charts and tables, it will be able to determine the location of the explosion to within a few miles even under the worst conditions. Help to the survivors will then be dispatched.

Dr. Ewing explained how the sound waves travel thousands of miles under water. While engaged in prewar studies and trial tests of the passage of sound under water, he discovered that sound could be heard for horizontal distances of thousands of miles if wasteful reflections could be eliminated, and if sensitive amplifiers and detectors were used to aid the ear.

"Oceanographers had already determined the speed of sound at various depths in the ocean, and found a minimum velocity at a certain depth, with higher velocities above and below," he stated. "The ray paths followed by sound in water are refracted toward regions of lower velocity. Thus, if a small bomb is fired at depth of minimum velocity, a considerable portion of sound from it will be refracted up and down, crossing and recrossing this depth and never encountering surface or bottom."

The underwater sound channel used in SOFAR is over 3,000 feet below the surface. In this channel sound waves take 20 minutes to travel 1,000 nautical miles, equal to about 1,130 land miles. The sounds are picked up by hydrophones lowered into the channel. In tests, a listening station in the Bahamas was able to pick up sound signals from bombs dropped 3,100 miles away. No other natural or man-made sound had ever been heard more than a fraction of this distance, one of the scientists stated.

Science News Letter, May 25, 1946

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MEDICINE

New TB Treatment

Patients actually stop breathing for hours at a time in the new iron lung which is being tried in the treatment of tuberculosis.

➤ A NEW KIND of iron lung, which actually stops the breathing for hours at a time, has restored health to six out of 12 patients with advanced tuberculosis of both lungs, Dr. Alvan L. Barach of Columbia University College of Physicians and Surgeons reported to the American College of Physicians.

The patients stop breathing for the eight to eleven hours they spend daily in the new apparatus. No movement of the ribs or diaphragm can be detected even by X-ray pictures. The patients lie relaxed without moving and for the most part are not even bored though some use the radio for amusement.

Air is wafted in and out of their sick lungs by the apparatus which, through a special device involving a collar around the neck, equalizes the pressure on both sides of the chest wall as well as the upper and lower surface of the diaphragm. This pressure-equalizing feature is the chief difference between the new apparatus and the iron lung used for polio victims. Because the pressure is equalized, the lungs are completely at rest and cavities in them heal.

Patients who were not helped by other methods of treatment recovered after one to three courses of the non-breathing treatment. Two of the recovered patients have been well and at work for four years. A single course of treatment takes three to four months during which the patient spends eight to eleven hours every day in the apparatus.

The patients have to learn how not to breathe. They may learn this in a few hours but some take two or three days. At first their sinuses and ears bother them. The effect of the oscillating pressure on the ear drum is like that of swift ascent and descent from high altitude. A sponge rubber cover over the ears or a radio microphone lessens this feeling and in all cases the patients become oblivious to it. Vasoconstricting nasal spray helps relieve the sinus congestion.

The effect of stopping breathing on the central nervous system is of considerable interest, Dr. Barach pointed out. The patients lie for hours without moving their hands or changing position. The desire to smoke disappears even in those used to smoking two packs of cigarettes daily.

Dr. Barach has been working on this method of putting the lungs at complete rest for nine years and says the ideal has not been achieved. He hopes that other investigators will try the method so that further improvement and appraisal of its value will be made. Latest improvement in the equalizing pressure chamber has been air conditioning. Patients apparently do not get claustrophobia and after they have learned to stop breathing they either do not object to the treatment or actually like it.

Science News Letter, May 25, 1946

MEDICINE

Emotional Disturbances Create Aches and Pains

➤ UNCONSCIOUS, smoldering resentment, frequently aroused by marital difficulties, is the cause of many of the nagging backaches and other muscular aches and pains, fatigue and lack of energy which are often diagnosed as fibrositis, Dr. Edward Weiss of Philadelphia told members of the American Society for Research in Psychosomatic Problems.

Of the 40 patients he reported, all but five were women and only four of the women were unmarried.

These unconsciously resentful patients have pain in their muscles because muscles serve as a means of defense and attack, Dr. Weiss explained. Internal tension is relieved by muscular action, but when there is no action the patient feels that her muscles are hurting and she cannot use them.

Their lack of energy is sometimes wrongly put to lack of vitamins. Actually they are lacking not vitamins but emotional satisfaction in their lives, Dr. Weiss said. Instead of prescribing more rest, the doctor should get them active and teach them to carry on in spite of the aches and pains.

The roots of their trouble usually lie in difficulty with growing up emotionally. They are, in a sense, having growing pains, and when these come later in life, they are apt to be more painful than in childhood. Instead of braces and supports for their aching backs these patients need inner braces—braces for their emotional development.

Some of these patients may have an organic disease such as brucellosis, or undulant fever. This germ disease makes a person pepless and gives him muscular aches and pains, too. There may be other diseases present along with the emotional trouble. Sometimes organic disease breaks down a person's psychological defenses and he regresses unconsciously to a childish emotional state. The form this takes is determined by his previous personality development.

Science News Letter, May 25, 1946

A *nylon plant* is planned for Australia with the help of Canadian technical resources and skilled manpower.

BLAST RECORDER—Shown in the Westinghouse Research Laboratories, where equipment for test procedures for "Operation Crossroads" was coordinated, is this maze of intricate instruments that will record for scientists the force of the atomic bomb blasts near Bikini Atoll this summer. Small electrical signals from the target ship will be amplified and fed into a transmitter, which will send out high-frequency radio signals corresponding in intensity to the force of the blasts. High-speed cameras many miles away will make on film a permanent record of the tests.

MEDICINE

'Flu Vaccination Advised

Results of Army experience show that it is very worthwhile. Ratio at one university of vaccinated to unvaccinated was one to nine.

➤ GET YOURSELF vaccinated against influenza next fall, especially if an epidemic seems brewing. This, in effect, is the advice, based on Army experience, given by Dr. Thomas Francis, Jr., and Dr. Jonas E. Salk of the University of Michigan School of Public Health, at the meeting of the American College of Physicians.

Everyone in the Army was vaccinated against influenza last fall by order of the Surgeon General. Groups of vaccinated Army students and unvaccinated students at two universities were studied during last winter's outbreak of the disease.

At one university, the Michigan doctors reported, the ratio of influenza cases among vaccinated and unvaccinated was one to nine. The rate of hospital admissions for respiratory disease, which might mean everything from bad colds to pneumonia and would include influenza, was 1.1% among 800 vaccinated and 9.9% among unvaccinated.

These figures, the doctors stated, reflect the general trend in the vaccinated Army as compared with other similar unvaccinated groups in the population.

Earlier studies with the vaccine showed that it may give protection for as long as a year.

"The problem for the future," the doctors pointed out, "is to devise means for enhancing and prolonging individual protection and to extend knowledge into the field for establishing the minimum requirements to prevent the epidemic phenomenon."

Vaccination of part of the population gives some protection even to the unvaccinated, they explained. This is because it reduces by the number protected by vaccination the number who might otherwise get the disease and pass it on. When scientists get some knowledge of how much the spread of influenza into epidemics can be checked by vaccination of part of the population, and by how large a proportion, it may not be necessary to take steps to protect every individual by vaccination.

"Until such time," they cautiously advised, "it would appear advisable to suggest that the protection of the individual should be practiced."

Some reactions to the influenza vaccinations occurred. They were about the same as those following shots against typhoid fever. More serious reactions may occur in persons allergic to egg protein, since the influenza is made from virus grown on chick embryos.

Science News Letter, May 25, 1946

MEDICINE

Beef for Streptomycin

➤ THE MEAT SHORTAGE may be to blame in part for the short supply of streptomycin. In production of the drug, which is penicillin's potent ally in fighting germ diseases, a need for beef pancreas was cited specifically by Dr. Chester S. Keefer of Boston at the American College of Physicians meeting in Philadelphia.

Trypsin enzyme from beef pancreas is needed for the preparation of streptomycin from the crude brew of soil organisms which produce the drug. Beef pancreas, however, is also needed to produce insulin for diabetes. At present insulin has also a high priority on the pancreas supply because there is not any too much insulin, without which thousands of diabetics would die.

Streptomycin production is much more difficult than penicillin production and the yield per quantity of fluid is smaller; about ten times as much streptomycin by weight as penicillin is required to treat a patient. From one-thirtieth to one-eighth of an ounce of streptomycin is required daily in the average case. It must be given by injection every three to four hours. This also contributes to the difficulty in getting enough of the drug to treat all the patients who want it.

Dr. Keefer's committee of the National Research Council which allocates streptomycin for civilian use is now getting about one-fourth the total production, the rest going to the Army, Navy Public Health Service, and Veterans Administration. This supply is about enough to treat 1,000 patients per month.

Present cost is $15 for a thirtieth of an ounce but this is being paid by a grant from the manufacturers. Within the next month or six weeks CPA hopes to be able to allow commercial distribution of streptomycin for treatment of tularemia, influenzal meningitis and those urinary tract infections for which neither penicillin nor sulfa drugs are effective.

Science News Letter, May 25, 1946

PUBLIC HEALTH

Safer Automobiles for Fewer Highway Accidents

➤ AS PRESIDENT TRUMAN keynoted his Highway Safety Conference with a warning against murder on the nation's roads, the Committee on Engineering opened its discussions with a preliminary report offering some ideas for safer automobiles.

The report urges modern, sealed-beam headlights, declaring, "about one-third of the vehicles met on the road have old-style headlighting in various stages of depreciation." Polarized headlights are called a "possibility" with more experimental work needed.

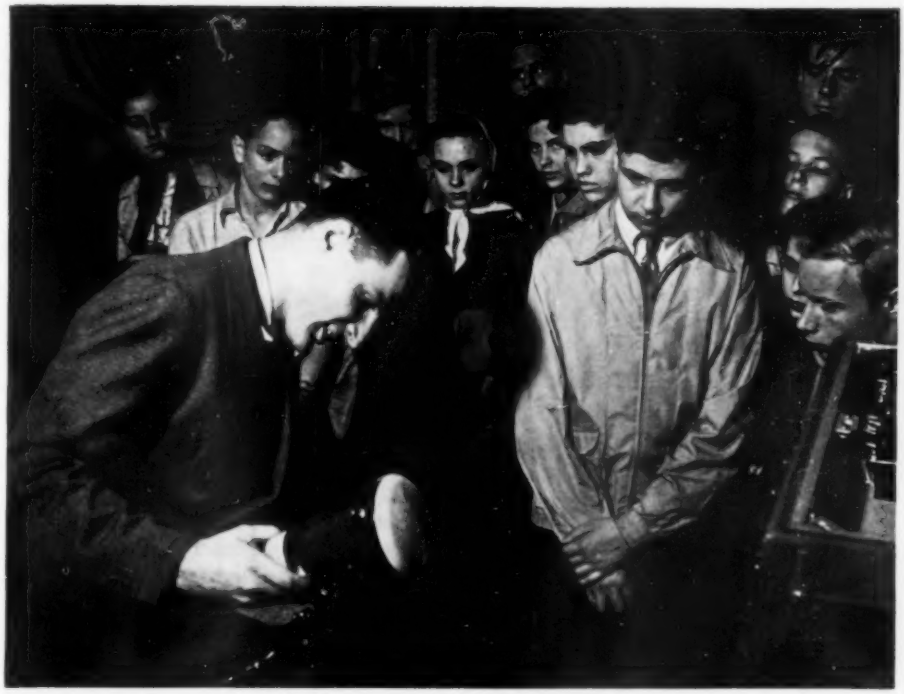
Direction signal lights on cars have not reached the stage of standard equipment, the report says, adding that modification of some highway laws will be necessary if they do. While there is no substitute for good driving in turning, the engineers report that signal lights seem to be a desirable safety measure.

Wartime synthetic rubber may continue in the tubes of your tires, because tubes made of butyl are safer than natural rubber. Tubes made of this synthetic maintain inflation pressures over much longer periods than do tubes made of the natural rubber product.

The report found shortcomings in some safety proposals. Governors on passenger automobiles, the engineers say, would be hazardous because they would prevent the driver from speeding out of trouble in some cases.

Even safety glass, praised for its shatterproof qualities, must be modified to save lives. Present safety glass in cars is so strong that fractured skulls are reported instead of cuts from flying glass.

Science News Letter, May 25, 1946



FIRST INSPECTION—The Naval Research Laboratory is opened to the public for the first time since the war, and the first visitors were a group of junior high school students. T. H. Chambers, radio engineer of Naval Research Laboratory, Office of Research and Inventions, explains the cathode tube and the Navy's radar equipment to Alice Deal Junior High School students, Washington, D. C.

BIOLOGY

Busy Molecules

Genes duplicate selves while managing other molecules. Other protein molecules participate in the business of life, but only genes have this double activity.

➤ GENES are exceedingly busy little things—protein molecules that have the power to create other genes in their own likeness and at the same time manage the manifold businesses of the living body, Prof. George W. Beadle of Stanford University told scientists gathered at the George Westinghouse Centennial Forum in Pittsburgh.

Although protein molecules of many other kinds participate in the business of life, none but genes are known to have this double activity, he said. Nearest thing in both size and activity, are the virus particles that cause many diseases; but although these have the power of self-duplication they do not direct activities other than their own—they are parasites, and can only destroy.

Prof. Beadle conjectured that life may have originated on this planet by some "independent" genes being assembled out of non-living atoms, and in the long course of ages becoming associated with other genes, eventually building up something that could properly be called an organism.

Infinitely Small Beings

Scientists are learning more about the nature of life by prying into the almost infinitesimal cracks that exist between molecules and atoms in living substances Dr. Linus Pauling of the California Institute of Technology told the Forum. These go far below the length of the shortest light waves, so that visual means are of no use for examination or measurement; the researcher's tools for this work are beams of X-rays and electron streams.

To give a more vivid picture of the task, he bade his hearers imagine a giant 250,000,000 times the size of a man trying to examine New York City. The whole earth, to such a being, would be about the size of a billiard ball; New York would be a barely visible speck a hundredth of an inch in diameter.

With a microscope the interplanetary giant would be able to make out such features as the rivers and Central Park, and some of the massed grouping of skyscrapers. But to pick out individual skyscrapers and perhaps to learn something about their larger rooms an electron microscope would be necessary. On this scale, automobiles would be barely visible spherical specks, and people could not be seen at all.

Friends and Enemies

Microbes can be friends to man as well as enemies, declared Prof. Selman A. Waksman of Rutgers University, discoverer of streptomycin. We became unpleasantly acquainted with a number of the unfriendly kinds during the recent war, especially in the steaming tropics of the Southwest Pacific, he said. These included not only disease germs but also some especially pernicious fungi that spoiled food, clothing and equipment.

With friendly microbes we have been longer acquainted, he pointed out. Ancient man made use of them long before anyone ever saw them or knew what they were: yeasts raised his bread and made his beer and wine, root-nodule bacteria helped clover to raise the fertility of his fields, bacteria and molds gave flavor to his cheese and ripened his butter. In our time, soil-inhabiting bacteria and molds have given man his best weapons against the unfriendly microbes that try to kill him.

Science News Letter, May 25, 1946

Ladino Clover is a giant form of common white clover, and makes good pasture.

A *bird's feather,* for its size and weight, is said to be the strongest structure in nature.

Lacrosse, now a popular college game, was played by American Indians long before white people came to the present United States; Indian fields were from one to five miles long and often 100 men played on a single team.

PHYSICS

Don't Worry About Rockets from Overseas

➤ IF YOU have been lying awake nights worrying about rockets attacking us from some other continent, relax.

The maximum practical range for rockets of the V-2 type, improved with wings for gliding, is about 500 miles, not enough to offer much of a threat from any other continent.

Dr. J. C. Hunsaker, chairman of the National Advisory Committee for Aeronautics and Massachusetts Institute of Technology professor, in a scientific communication to the National Academy of Sciences, gave this engineer's view of the future possibilities of an improved V-2 type rocket.

Calling the German V-2 weapon "the highest state of the art of rocket design," he explained that its starting weight was nearly 14 tons of which 9 tons was fuel, yet its true pay load was only one ton of explosive. It had an artillery type trajectory of about 200 miles. A ratio of starting weight to empty weight of much more than three is unlikely in an improved rocket, in Dr. Hunsaker's opinion, and the present range of 200 miles is near the maximum for the type.

By the addition of wings, Dr. Hunsaker explained, the range could be stretched several hundred miles. This would change the artillery type of path through the air into a glide under the pull of gravity. But this would not be enough "to provide missiles to be projected on an intercontinental adventure."

Science News Letter, May 25, 1946

PHYSICS

Quarter of a Million Revolutions per Second

➤ SPINNING at speeds approaching a quarter of a million revolutions per second, little steel balls in the physics laboratories of the University of Virginia are the fastest-turning things in the world. Use of these whirling spheres as super-centrifuges to study the behavior of steel and other materials under great strain was described before the meeting of the Virginia Academy of Science in a joint report prepared by J. L. Young III, J. W. Moore and Prof. J. W. Beams.

At a measured speed of 211,000 revolutions a second, the "equator" of one of these one-sixteenth-inch steel spheres reaches a velocity of a little more than 3,300 feet a second, which is approximately three times the speed of sound, and 600 feet a second faster than a bullet as it leaves the muzzle of a Garand rifle. The centrifugal force generated is 1,400,000 times greater than the pull of gravity at the earth's surface. This far exceeds the calculated gravitational pull at the surface of the sun, which is only about 27 times that of the earth.

Nothing touches the sphere as it spins. It is held up by a carefully adjusted magnetic field, like the legendary coffin of Mohammed, and kept going by an electric drive. To eliminate air friction, which might cause it to burn itself out like a stationary shooting star, it is operated only in a vacuum.

Science News Letter, May 25, 1946

ENGINEERING

Latin American Engineers Study Road Building

➤ HIGHWAY OFFICIALS of 16 Latin-American countries started from Washington, D. C., last week to visit modern highways in Midwestern states, roads under construction and plants making road materials. They have come to the United States to gather technical information to apply to their local highway building programs.

These engineers, together with others from China, India and Egypt, have just completed a five-week Inter-American highway course in the National Academy of Sciences building. The course was given by outstanding engineers from federal and state highway departments. As a part of the instruction visits were made to nearby Maryland and Virginia highways.

The western trip, which will be by special bus, will be over the famed Pennsylvania Turnpike to Pittsburgh, and then over other noted roads to Chicago, where the delegates will attend a Road Show and Highway Congress of the American Road Builders' Association.

The inspection trip will be followed by several months of actual employment in a variety of engineering, manufacturing and construction jobs, after which the delegates will return to Washington for a round-up course.

Latin-American countries represented are Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, El Salvador, Ecuador, Honduras, Mexico, Panama, Paraguay, Peru, Uruguay and Venezuela.

Science News Letter, May 25, 1946

IN SCIEN

BIOLOGY

Skipper Caterpillar Solves Housing Problem

See Front Cover

➤ THE LARVA of the silver-spotted skipper butterfly handles its own housing problem by using several leaves, as shown in the photograph by George A. Smith on the front cover of this SCIENCE NEWS LETTER, for a comfortable dwelling place. In building a house, the larva fastens several leaves together with strands of silk so that it will have a retreat when resting or molting. It generally remains in its house during the day, and comes out to feed during the night. As the caterpillar molts and grows bigger it leaves its old home, and constructs a new and larger one. This is shown by the fact that many of these peculiar dwellings, among locust leaves where the caterpillar usually lives, are empty when examined. Whether or not the house is occupied, it is always as scrupulously clean as that of a Dutch housewife.

Science News Letter, May 25, 1946

CHEMISTRY

Cellulose Acetate Made By Unusual Process

➤ CELLULOSE ACETATE, widely used in transparent and high-strength plastics, was produced during the war by an unusual process in Germany which required less acetic acid than normally used, it is now revealed.

The process involves treating beechwood pulp with acetic acid in the presence of a large excess of zinc chloride. The mixture used for acetylation consists of 950 pounds of solid zinc chloride, dissolved in 1780 pounds of 100% acetic anhydride and 1000 pounds of glacial acetic acid. No sulfuric acid, commonly used as a catalyst, is required.

British and American scientists learned of the new process while visiting Germany since the war in search for technical developments of value to the two governments. The U. S. Department of Commerce released a report giving details of this unusual method.

Science News Letter, May 25, 1946

NCE FIELDS

PSYCHOLOGY

Human Volunteers for Bikini Test Declined

➤ A CURIOUS medley of motives stimulated the 40 persons who have offered themselves for exposure to the atom bomb's blast on the target ships at Bikini atoll. Their offers, though not their names, were disclosed at Vice Adm. W. H. P. Blandy's final press conference before he took off for the Crossroads Operation site.

One individual wanted to be paid $10,000—presumably in advance. Several were obviously crackpots, and some were daredevils seeking publicity or a thrill. A few, including one old man who didn't expect to live much longer and one convict who lost his chance to fight in World War II, declared their anxiety to be of service to their country.

All 40 received courteous answers—declining their offers.

Even the pigs and goats will not be exposed to the full fury of the blast. They will be on vessels outside the center of the target area, or behind the thick steel of turrets and conning towers.

"We can't learn anything from dead animals," Adm. Blandy commented. "We don't want dead animals, we want sick animals." And he added that medical officers will try to bring the radiation-sick specimens back to health.

The last human beings on the target ships, there to place instruments, etc., will be removed three hours before the bomb is dropped.

Science News Letter, May 25, 1946

GENERAL SCIENCE-EDUCATION

Virginia Conducts First Statewide Talent Search

➤ AT A BANQUET, held in candlelight due to emergency power restrictions, the Virginia Academy of Science turned the spotlight on the 15 high school seniors, winners in the first statewide Science Talent Search.

Top honors of $100 each went to Barbara Ann Macy, Thomas Jefferson high school, Richmond, and Lewis Franklin Garber, Highland Springs high school, Sandstone. Miss Macy plans to be a chemist; Mr. Garber a physicist. Both were named for honorable mention in the national Science Talent Search earlier this year.

Fifty-dollar bonds were awarded to the rest of the 15 contestants.

Offers of scholarships from colleges, universities and technical schools in and out of the state to the 15 teen-age scientists now total $30,000.

The Virginia Science Talent Search has been run concurrently in cooperation with the National Science Talent Search, administered by Science Clubs of America, a Science Service activity.

Science News Letter, May 25, 1946

PHOTOGRAPHY-CHEMISTRY

Metallic Silver Recovered Cheaply with Wood Waste

➤ SILVER CAN be recovered cheaply and quickly from used photographic hypo through the use of lignin, waste product from wood. When lignin treated with alkali is poured into the hypo, silver in the photographic solution quickly settles to the bottom along with the lignin. The liquid hypo is poured off, the lignin burned, and metallic silver is left.

This process, far more convenient than any used at present in salvaging silver from used photographic solutions, will be a boon to companies that develop films on a large scale. It was devised by Dr. Eduard Farber and Dr. M. Sciascia of the Timber Engineering Company, where research into lignin and other chemical phases of wood is conducted.

Only a small amount of lignin need be used, an amount equal to the silver to be saved being sufficient—a fraction of the quantity of other solutions needed.

All of the silver will drop to the bottom of the solution within an hour when it is heated.

Lignin left from making wood sugar is good for recovering silver from the hypo. Treated plain sawdust and even mill waste may also be employed. The solution can be dehydrated for shipping.

For quickest results, the used hypo should be heated before the wood solution is added. Silver will begin to settle out a few minutes after the mixture has been made sufficiently alkaline.

By burning the organic wood material in the precipitate, silver is obtained in the form of a metallic residue. This can be purified by washing with dilute mineral, acids which do not attack the silver, or by any other method usually employed for refining metal.

Science News Letter, May 25, 1946

MEDICINE

New Memorial Fund for Medical Research

➤ GRIEF OVER the loss of friends and relatives will provide the means for scientific attacks on the diseases from which they died, if a new memorial plan recently proposed captures the imagination of the American public.

A group of medical men, scientists and laymen have organized a medical memorial fund to receive memorial gifts that would be applied to some of the neglected fields of medical research. A memorial certificate would be sent by the national organization to a relative of the person in whose memory the gift is made.

Heart and artery diseases, the nation's greatest causes of death, had only 17 cents per death in charitable funds given for research upon these diseases, Dr. Harlow Shapley, Harvard astronomer and chairman of the trustees of the new memorial, said in announcing the new fund.

Dr. Henry S. Simms of Columbia's College of Physicians and Surgeons, is president, while Dr. J. Murray Steele is medical director and head of the group that will allot funds for research.

Science News Letter, May 25, 1946

ACOUSTICS

Hearing in Noisy Places Aided by "Ear Wardens"

➤ YOU CAN HEAR better in noisy surroundings if you wear ear plugs. That was proved on fighting ships during the war, and may find important uses in peacetime industry.

Experiments on wartime plugs, called "ear wardens," were reported to the Acoustical Society of America by K. D. Kryter of the Psycho-Acoustic laboratory, Harvard University.

Using the "ear wardens," you can understand announcements over a public address system better if the surrounding noise is any greater than normal conversation or 75 decibels, the scientist declared.

He said that in many situations where high noise levels are present, ear plugs can be used to understand speech more clearly, to prevent hearing losses and to reduce annoyance and fatigue commonly attributed to noise.

During the war, the Navy used "ear wardens" to help make orders more clearly understood in the noise of battle.

Science News Letter, May 25, 1946

ASTRONOMY

Venus Shines in West

It is most brilliant object in June evening skies. Summer starts on June 21, when the Northern Hemisphere begins to receive its greatest radiation from the sun.

By JAMES STOKLEY

➤ LOW in the west, as the evening skies darken, is the brightest star or planet of June. This is Venus, which is gradually swinging around to the east of the sun so that it remains longer and longer in view after the sun has gone down. It is in the constellation of Gemini, the twins, but these stars are much fainter, and not as easy to locate. The two principal ones in the constellation—Castor and Pollux —are both shown on the accompanying maps. These depict the heavens at 10:00 p. m., your own kind of standard time, on June 1 and an hour earlier at the middle of the month. Where daylight saving time is observed, this will, of course, be at 11:00 p. m. on the first and 10:00 p. m. on the 15th.

On the astronomer's scale, Venus is of magnitude minus 3.4. Close to it is another planet, Saturn, which is much fainter, of magnitude 0.4. On the map, Saturn is shown below Venus as it will be after the middle of June. Earlier, Venus will be lower, and on June 12 will pass her fainter and more distant brother.

Mars and Jupiter

Two other planets are also indicated, in somewhat better positions for viewing. Directly west, in the constellation of Leo, the lion, is the red planet Mars. Since January 10, Mars has been receding from the earth and continually dimming. Then its magnitude was minus 1.2, but it was at the comparatively short distance of 59,400,000 miles. Now it has gone out to 169,440,000 miles, and has dropped to magnitude 1.6. By December it will be still more distant, at 225,580,000 miles, but it will be nearly in line with the sun and not visible. Mars in June is close to the star Regulus. On June 18 they will be nearest, with Mars less than a degree (twice the apparent diameter of the full moon) to the north.

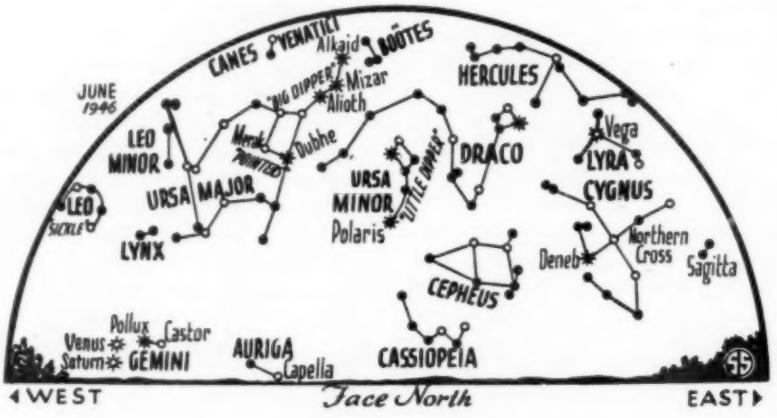
Our fourth June planet is Jupiter. With magnitude minus 1.8, it is more brilliant than any except Venus. The constellation of Virgo is its location, and it is close to the star Spica, which it exceeds in brightness about 16 times.

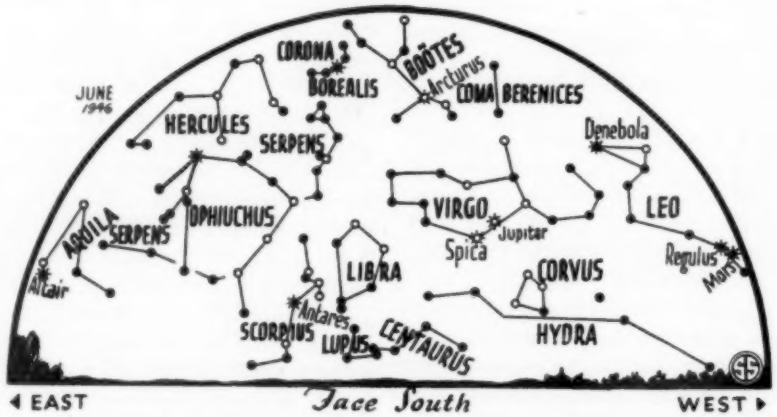
Mercury, the only other planet that ever becomes bright enough to be seen without a telescope, will hardly be visible at all in June. By the 30th, however, it will be about 15 degrees above the horizon at sunset, just north of the west point. Then, and for the next few days, it will be possible to get a glimpse of it if you have a clear view to the west.

Some of the stars of June evenings have been mentioned. The brightest is Vega, in Lyra, the lyre, which is high in the east. Below it is Cygnus, the swan. Six of the stars in this group form the "northern cross" with Deneb at the northern end. To the right of Cygnus is Aquila, the eagle, where Altair is the brightest star. High in the south, above the eastern end of Virgo, is Bootes, the bear driver, containing first magnitude Arcturus. Just to the left of this figure is a semicircular group called Corona Borealis, the northern crown. It was in this constellation that a star called T Coronae Borealis unexpectedly flashed out to naked eye visibility a few months ago, but now it has dimmed again and can only be seen with a telescope. (*See* SNL, Feb. 16).

Low in the south is Scorpio, the scorpion, in which ruddy Antares shines. Only part of this constellation is indicated, but later in the evening it is entirely in view. Extending eastward from Antares is a hook-shaped row of stars which forms the scorpion's tail.

On June 21, at 7:45 p. m. EST, occurs the summer solstice. This is the moment when the sun, which has been moving northward since last December, reaches its farthest north. In the northern hemisphere this is the beginning of summer,





☼ ✷ ○ • SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS

but in countries south of the Tropic of Capricorn, it marks the beginning of winter.

This year there are six eclipses, of which the third and four come in June, but unfortunately, neither will be visible in the United States. On June 14 the moon will enter the earth's shadow, producing a total lunar eclipse. This will be seen throughout most of the Eastern Hemisphere, Antarctica, Australia and New Zealand, and the eastern tip of South America.

Two weeks after that, when the moon has moved half way around the sky and is in the same direction as the sun, it will come partly between the sun and the earth, producing a partial solar eclipse. At a point in Greenland, near the Arctic Circle, this will be at maximum, but even there less than a fifth of the sun's diameter will be hidden. In northern Canada it will be visible also, during the night, for this is the land of the midnight sun.

At this time of year, when the sun is farthest north, we in the Northern Hemisphere receive the greatest radiation from it, and we begin to be impressed, unpleasantly perhaps, on a hot summer day, with the energy that it sends us. Without it however, the earth could be a dead, cold world. Upon this radiation of energy, most of which is broadcast to space so that only a very minute fraction reaches our planet, we are completely dependent for our very existence.

Old Atomic Energy

No matter whether we burn wood, coal or oil, or whether we use power from falling water, or from the wind, all of our energy ultimately comes from the sun. And this energy has an atomic source. Thus atomic energy, which has become such a common topic of discussion, is nothing new. Indeed, the earth has never used anything else but atomic energy! However, we have had to use it very indirectly—now we are beginning to learn how to take it directly from the sources at the hearts of atoms.

Hans A. Bethe, Swiss-born physicist of Cornell University, is the scientist who finally gave a solution to the old problem of how the sun keeps fueled. Ordinary burning is not nearly adequate, a fact that was long ago recognized. Other theories have been propounded but they, too, were found wanting. Though Dr. Bethe's suggestion is still only a theory, it seems to rest on very solid ground, and is now generally accepted by astronomers.

In the process thus envisaged, hydrogen is the fuel. This is the lightest and simplest of the elements. Its atom consists of a proton, a particle with a positive electrical charge, around which revolves a single electron, carrying a charge of negative electricity. In the sun, and in other stars, four nuclei of hydrogen atoms are eventually combined to form a single atomic nucleus, which is that of the gas helium. The helium nucleus, however, is not quite four times as massive as one of hydrogen. Some of the mass is lost in the process, and this is given off as energy.

Six Steps in Process

The process has six steps. It is a cyclic one, but usually it is considered as starting with an atom of ordinary carbon, with which an atom of hydrogen unites, resulting in the emission of some energy and leaving an atom of a short-lived variety of nitrogen, which quickly changes to another form of carbon. Then the second hydrogen atom comes along, the carbon is transmuted to ordinary nitrogen, the kind which makes up most of our atmosphere. Energy comes off again at this transformation. Along comes another hydrogen, and the nitrogen is changed to a rare kind of oxygen. This, too, lasts briefly, and soon changes to still another kind of nitrogen. Then the fourth hydrogen atom arrives, and the nitrogen changes to helium and ordinary carbon. The latter is what we started with, so the cycle is ready to start over again.

The times required, on the average, for these changes, vary widely. The fourth step from nitrogen to oxygen requires 4,000,000 years for one atom but there is so much material in the sun that it is occurring all the time. The next step is the shortest, and an atom of the oxygen produced will probably change to nitrogen in about two minutes.

Though this process is so important, it is unlikely that we will ever be able to reproduce it on earth, for it takes place only under the conditions of temperature—millions of degrees—and the enormous pressures that prevail inside the stars. Atomic energy on earth will probably long continue to be dependent on the process of fission of uranium, as used in the atomic bomb, or one that is comparable to it.

Celestial Time Table for June

June	EST	
1	6:36 p. m.	Moon passes Venus
2	1:21 p. m.	Moon passes Saturn
4	1:35 p. m.	Moon passes Mars
6	11:06 a. m.	Moon in first quarter
8	10:22 p. m.	Moon passes Jupiter
12	8:00 a. m.	Venus passes Saturn
	5:00 p. m.	Moon farthest, distance 252,300 miles
14	1:42 p. m.	Full moon, total eclipse of moon, visible in Eastern Hemisphere
21	7:45 p. m	Sun farthest north, summer commences
22	8:12 a. m.	Moon in last quarter
23	8:00 p. m.	Mercury passes Saturn
27	7:00 p. m.	Moon nearest, distance 223,400 miles
28	11:06 p. m.	New moon, partial eclipse of sun, visible in Arctic regions
30	4:55 a. m.	Moon passes Saturn
	6:17 p. m.	Moon passes Mercury

Subtract one hour for CST, two hours for MST, and three for PST. Add one hour for the corresponding Daylight Saving Time.

Science News Letter, May 25, 1946

NUTRITION

Letting Milk Stand May Reduce Value

➤ LETTING milk stand in bottles on the doorstep may destroy some of its nutritional value. Using ultraviolet light to destroy germs in it may be even worse. Experiments reported by H. D. Kay of the National Institute for Research in Dairying at Shinfield, Reading, England, indicate that exposure to light destroys a fat-digesting enzyme present in milk as it is drawn from the cow. Even a few minutes of such exposure will cause a partial breakdown of this compound; a half-hour's exposure produces 80% destruction.

Science News Letter, May 25, 1946

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Do You Know?

Birds eat at least half their own weight in food daily.

Wild *bison* could smell water five miles away, it is said.

Only about one-third of the *wood* in a tree is now converted into usable products.

Jimson weed is a fence-corner relative of the potato and the tomato and several other useful crop plants of the family Solanaceae.

A bag of *silica gel* stored with the household crackers and breakfast cereals will keep them crisp and edible in humid weather.

More than 15,000 groups of *sunspots* have been recorded since 1873; 25 of these were conspicuous when viewed by the naked eye through dark glasses.

Some *hermit crabs* live in water, some along the shore; both kinds vary in size from those with shells hardly larger than the head of a pin to others of grapefruit size.

The common *cowpea,* also known as the blackeye pea or the blackeye bean, provides popular human food in its seed and valuable feed for cattle in the plant itself; when plowed under the plant enriches the soil.

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PUBLIC HEALTH

Polio in Florida

This state has almost four times as many cases this year as in 1945. But only 56 cases of the disease were reported for the entire nation the week of May 11.

➤ TEXANS seem to have gotten excited over an increase in infantile paralysis cases, but Florida is the spot national health authorities are more inclined to view with concern over signs of an impending outbreak of the disease.

Latest reports to the U. S. Public Health Service show that for the week ending May 11, Texas had 16 cases of polio while Florida had 17. Since the first of the year, Texas has had 63 cases compared with Florida's 98. That gives Florida almost four times as many cases this year as in 1945, while the Texas figure for the year so far is only nine cases more than the previous year. Texas, like California, has for the past several years had what health authorities call "a good deal of residual polio," meaning that a good many cases occur long after the polio season has elsewhere closed in the fall and before it starts up in the summer.

Clean-up campaigns such as have been started in Texas are not likely to stop an infantile paralysis epidemic, if one is coming, though such campaigns are good in themselves. Flies have been shown capable of carrying the infantile paralysis virus but there is no valid evidence that they play a part in spreading the disease or causing epidemics. The same is true of unsanitary conditions. Infantile paralysis virus has been found in sewage and in bowel discharges of patients, but there is no valid evidence that it spreads, as typhoid fever does, through sewage-contaminated water.

Only 56 cases of infantile paralysis were reported for the entire nation for the week of May 11. This includes the Texas and Florida cases.

The only real hope of preventing infantile paralysis lies in the development of a protective vaccine, Dr. H. E. Van Riper, assistant medical director of the National Foundation for Infantile Paralysis, declared in discussing the situation.

No such vaccine exists at present although scientists are trying to develop one.

Hope of protecting children from polio by injections of material from blood as they can now be protected against measles by such material is very slim. Such antipolio substances have been found in blood, Dr. Joseph Stokes, Jr., of Philadelphia reported at the meeting of the American College of Physicians in that city.

Difficulties in using it, even for a trial, are many, he pointed out. It would take enormous quantities of blood, since it might be necessary to give children repeated injections throughout the summer, and the amount of the material in a pint of blood is very small. There are different strains of polio virus, just as there are of influenza virus, and even large pools of blood plasma might not contain the strains needed for protection in a given epidemic. Finally, the demands of frantic parents to have their children included if they knew trials of such a procedure were under way might make it impossible for the trials to continue or to give any real information on the value of the procedure.

Science News Letter, May 25, 1946

Drilling for *oil* will soon be resumed in northern Cebu in the Philippines; prewar uncompleted drilling gave encouraging indications of oil.

Over 20,000 acres of waxy *endosperm corn* is being grown in Iowa this year; it is a very new crop for America, raised to replace imports of tapioca and other starches from the East Indies.

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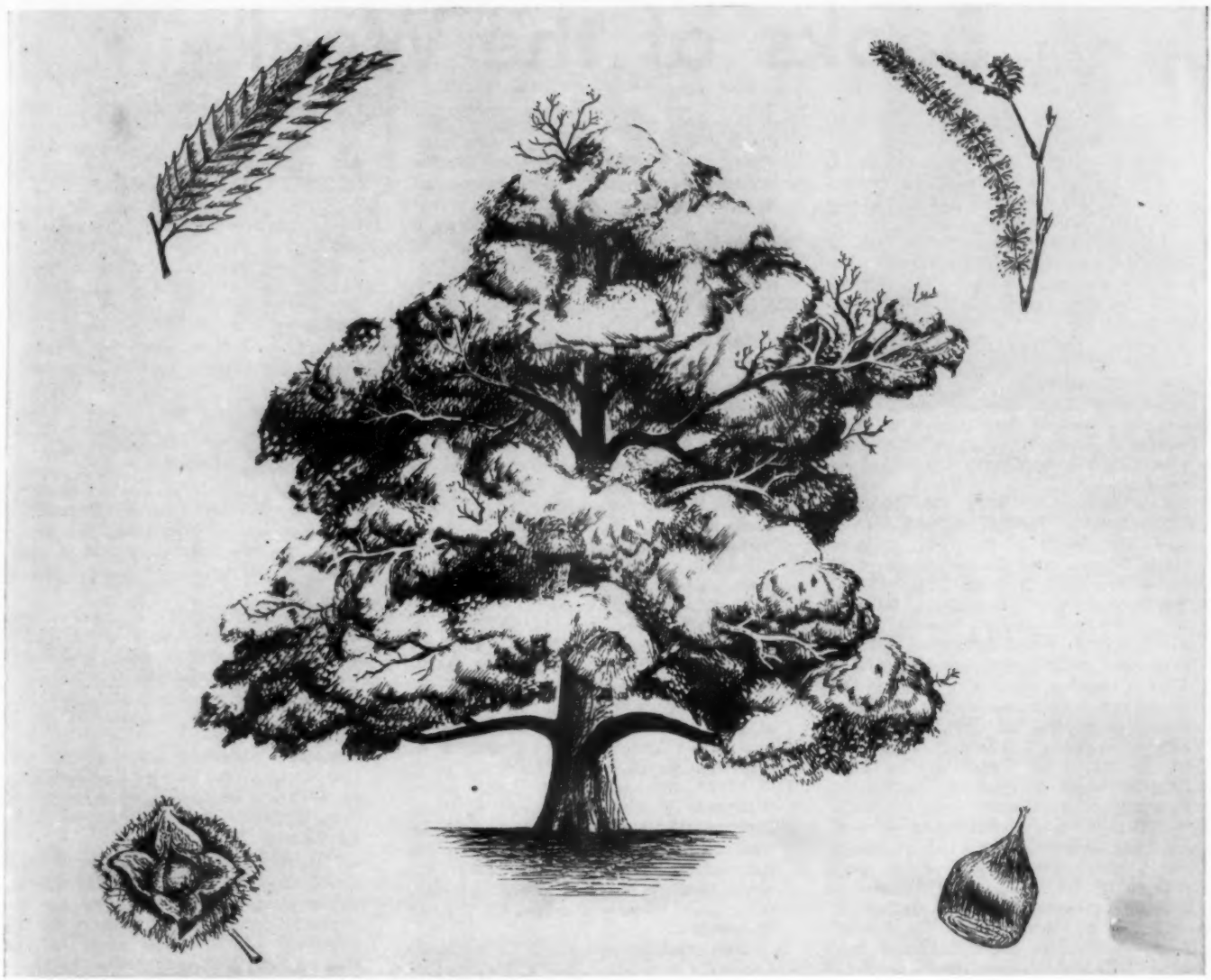

Gone is the "spreading chestnut tree"

Millions who recall Longfellow's immortal poem may be surprised to learn that the chestnut tree is nearly extinct. Entire forests have been killed by *Endothia parasitica,* a blighting fungus causing serious bark disease. It is a devastation that placed the leather industry in a critical position—for centuries, the fabled chestnut tree had been the chief source of leather tanning agents.

However, as is often the case when nature's replenishing power becomes inadequate, chemistry developed a replacement for the extract of the chestnut tree. It is Exan*—a Monsanto synthetic vegetable tanning chemical. Not only is a constant source of supply now assured, but Exan has already proved far superior to the natural product formerly used.

The story of Exan is a story of chemical synthesis paralleled by many Monsanto product developments. Monsanto plastics, for instance, are synthetics that offer glamorous and practical possibilities bounded only by the imagination of industry. Vanillin is another synthetic—a flavoring agent developed long ago by Monsanto as a defense against the caprices of nature in supplying vanilla beans. The wide field of rubber products is also among the many that have benefited richly through Monsanto synthetics.

*Reg. U. S. Pat. Off.

The history of Monsanto's progress in service is replete with examples such as these. Too numerous to recount here, they emphasize again Monsanto's important role—Serving Industry . . . Which Serves Mankind.

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• Books of the Week •

ADVANCING FRONTS IN CHEMISTRY: Vol II, Chemotherapy—Wendell H. Powers, ed.—*Reinhold,* 156 p., tables and illus., $3.25. A series of lectures given at the Symposium on Chemotherapy held at Wayne University. Each contributor has aimed at a presentation of his topic which will be easily understood by the lay reader, without depreciating its value to the research worker who is familiar with the field.

AMERICAN FOUNDATIONS FOR SOCIAL WELFARE—Shelby M. Harrison and F. Emerson Andrews—*Russell Sage Foundation,* 249 p., tables, $2. Description of the organization and finances, history, activities, and possible development of social welfare foundations in America, together with a descriptive directory of 505 foundations.

BIBLIOGRAPHY AND INDEX OF GEOLOGY EXCLUSIVE OF NORTH AMERICA: Volume 10, 1943-44—John M. Nickles, Marie Siegrist, and Eleanor Tatge—*Geological Society of America,* 203 p., $1.50.

A BIBLIOGRAPHY OF INFANTILE PARALYSIS: 1789-1944—Morris Fishbein, M.D., ed; Ludvig Hektoen, M.D. and Ella M. Salmonsen, compilers—*Lippincott,* 672 p., $15. A bibliography, with selected abstracts and annotations, of the periodical literature covering the clinical and investigative work on infantile paralysis since its description by Underwood in 1789. Prepared under direction of The National Foundation for Infantile Paralysis, Inc.

THE BIOLOGY OF SCHIZOPHRENIA—Roy G. Hoskins, M.D.—*Norton,* 191 p., $2.75. Schizophrenia considered from the point of view of the biologist and discussed as a manifestation of disordered biology.

A BUSINESS OF YOUR OWN: The Reader's Digest Manual of Ideas for Small Businesses—*Reader's Digest Assn., Inc.,* 128 p., paper, 25 cents. Selected entries submitted to The Reader's Digest Contest for ideas for unusual small businesses which might be started with comparatively little capital by returned veterans, or by other men and women who are ambitious to establish their own enterprises.

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THE COMMON SENSE OF THE EXACT SCIENCES—William Kingdon Clifford—*Knopf,* 249 p., diagrs., $4, new ed. An explanation of scientific and mathematical thought for the uninitiated. A book first published in 1885, newly edited with a biographical introduction by James R. Newman and a preface by Bertrand Russell.

HIGH VACUUM TECHNIQUE: Theory, Practice, Industrial Applications and Properties of Materials—J. Yarwood—*Wiley,* 140 p., tables and diagrs., $2.75, 2nd ed. A revised edition containing new sections on construction of vacuum systems, extra methods of measuring low pressures, and pumping speed.

A HISTORY OF MEDICINE—Douglas Guthrie, M.D.—*Lippincott,* 448 p., illus., $6. An outline of the progress of medicine from the days of Imhotep to those of Sir William Osler, answering the need of those who recognize the value of a comprehensive account of the development of medicine as an art.

AN INTRODUCTION TO THE STUDY OF ECLIPSING VARIABLES—Zdenek Kopal—*Harvard University Press,* 220 p., diagrs., $4. An account of the present state of the theory of eclipsing binaries and a survey of methods for deciphering the nature of such binary system from an analysis of their light waves.

THE JEW IN AMERICAN LIFE—James Waterman Wise—*Messner,* 621 p., illus., paper, $1.25. A vivid presentation in pictures of the Jew as an integral part of America, as farmer, laborer, artist, scientist, doctor, educator, lawyer, soldier, sailor and marine. Preface by Eleanor Roosevelt.

THE LOST AMERICANS—Frank C. Hibben—*Crowell,* 196 p., illus., $2.50. The story of the discovery of the ancient men who lived in America and roamed our western plains during the Ice Age.

MODERN ATTITUDES IN PSYCHIATRY: The March of Medicine, 1945—*Columbia University Press,* 154 p., $2. A symposium on the use of psychiatry in the practice of medicine. The tenth series of the New York Academy of Medicine Lectures to the Laity.

MODERN CHEMISTRY: Some Sketches of Its Historical Development—A. J. Berry—*Cambridge University Press,* 240 p., $2.50. A history of chemistry not based on chronology, but having separate chapters devoted to the history of different subjects—electro-chemistry; stereo-chemistry; radioactivity; elements; isotopes; experiments on gases; solutions; chemical change.

PAST CONSUMPTION AND FUTURE (1950) REQUIREMENTS OF POTASH SALTS IN AMERICAN AGRICULTURE—J. W. Turrentine—*American Potash Institute,* 31 p., tables, paper, free.

POSTWAR TAXATION AND ECONOMIC PROGRESS—Harold M. Groves—*McGraw,* 432 p,. tables, $4.50. A book aimed at providing the reader with a clearer understanding of the long-range factors involved in a planned tax structure; and at development of recommendations for a postwar tax system which will increase production and consumption, conserve resources, and encourage saving and investment.

THE PRINCIPLES AND PRACTICE OF TROPICAL MEDICINE—L. Everard Napier—*Macmillan,* 917 p., tables and illus., $11. An account of the more important tropical diseases from the point of view of epidemiology, aetiology, pathology, symptomatology; and of such relevant subjects as method of mitigating the effects of tropical climate, nutrition, and anemia in the tropics, and snakes and snake-bite.

PSYCHIATRY FOR SOCIAL WORKERS—Lawson G. Lowrey, M.D.—*Columbia Univ. Press,* 336 p., $3.50. A book to help the social worker recognize the symptoms which indicate mental disease, to decide when to call for psychiatric diagnosis and treatment, and to determine when he can safely undertake supervision and to understand the limitations of non-professional treatment.

THEORY AND PRACTICE OF FILTRATION—George D. Dickey and Charles L. Bryden—*Reinhold,* 346 p., tables and diagrs., $6. The general concept of filtration as applied to the separation of solids from liquids, and a brief treatment of gas filtration.

TUNGSTEN MINERALIZATION IN THE UNITED STATES—Paul F. Kerr—*Geological Society of America,* 241 p., maps and illus., $2.50. Geological Society of America, Memoir 15.

THE UNITED STATES MERCHANT MARINE AT WAR—War Shipping Administration *Government Printing Office,* 80 p., illus., paper, 30 cents. The operations of the War Shipping Administration from its creation on Feb. 7, 1942, through the end of hostilities, and up to Dec. 31, 1945. An attempt to evaluate the part that our Merchant Marine played in the victory of the United Nations.

THE WHITE ROOTS OF PEACE—Paul A. W. Wallace—*Univ. of Pennsylvania Press,* 57 p., $2. The story of the Iroquois Confederacy, a union for peace among the Iroquois Indians. Mr. Wallace has constructed the story of the Confederacy's founding from three existing versions of the legend, following the poetic language of the Indian originals as closely as possible.

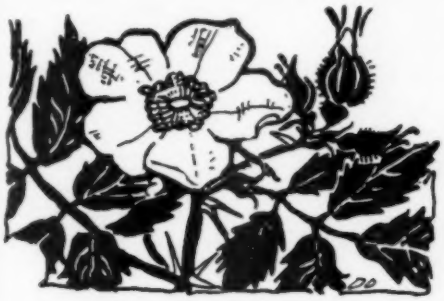
THE WONDERWORLD OF SCIENCE: Book Nine—Morris Meister, Ralph E. Keirstead, and Lois M. Shoemaker—*Scribner,* 698 p., illus, $2.20. A science textbook for use in the ninth grade, aimed at giving the beginning of an understanding of synthetic rubber, plastics, sulfa drugs, the foundations of matter, and at relating the developments in science with their social implications.

Science News Letter, May 25, 1946

Dates which have not been pollinated are mainly a waste because the unripened seedless fruits are small, hard, and have the taste of a green persimmon.

HISTORY-BOTANY

NATURE RAMBLINGS
by Frank Thone



For One Memorial Day

➤ MOST SUCH holidays are frankly more celebrations of past victories than a taking thought of the heroic dead. July 4, our first national holiday, tells its story in its official name: Independence Day. We celebrate it by reproducing, as peacefully and safely as possible, the noise and fire and smoke of battle. November 11, Armistice Day, usually called for a military parade. Presumably we shall presently be celebrating V-E or V-J Day, or both.

Only one of these holidays, however, is given primarily to thoughts of those who died for their country. That is Memorial Day, celebrated in most of the states on May 30, but still observed in some of the states of the old Confederacy on other dates of their own choosing.

It is perhaps natural that this particular holiday should center its attention on the dead rather than on the battles they fought and the victories they won. In the South there were the hardship and bitterness of defeat, but in the North there was little rejoicing. In a civil war there are no winners: all lose.

While the different dates of Southern Memorial Days may have resulted in the first instance from unwillingness of the losers to share the victors' holiday, there is another good reason in the ecology of flowers. Most of the Memorial Days in the South come earlier than May 30, enabling people to have spring flowers to place on the graves of the Confederate soldiers. It is quite natural to have an earlier date for this in, say, Georgia or Texas than in Maine or Minnesota.

However, since an increasing proportion of the flowers used on Memorial Day, as well as on all other occasions, are not home grown any longer, the question of having a single agreed-on date naturally suggests itself. It is a long time now since Appomatox; in three wars since then descendants of the wearers of both Blue and Gray have fought side by side, and have buried their dead in hasty battlefield graves. That which unites North and South today is many fold stronger than the things that once severed them. We are one in substance now; only the symbols remain at variance. What could better symbolize that unity than walking together to the graves of those who died for their whole country, with flowers in our hands?

Science News Letter, May 25, 1946

GENERAL SCIENCE

Scientists Must Learn Politicians' Characteristics

➤ SCIENTISTS, plunged into public affairs through their concern over atomic power control, will need to learn something of the mental adaptability and willingness to compromise that characterize the politician if they intend to continue such participation, Dr. Isaiah Bowman, president of the Johns Hopkins University, intimated in an address before the first postwar meeting of the National Academy of Sciences.

Such adjustments will not be easy for many thorough-going scientists to make, Dr. Bowman pointed out. Scientists are accustomed to reaching clear-cut solutions to their problems, and can prove that their conclusions are right. If they are right, compromise will be likely to seem absurd, even immoral. Such logical rigidity, desirable in science, can result only in deadlocks if attempted in government.

Science News Letter, May 25, 1946

Ethyl cleaner is a new synthetic, non-inflammable petroleum product particularly suitable for washing automobiles.

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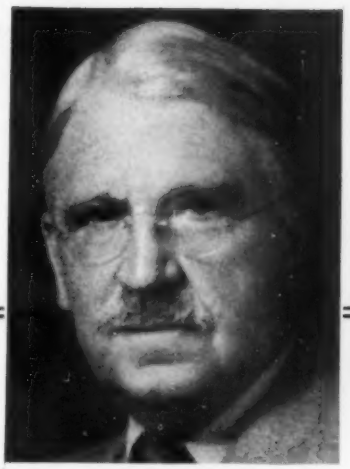

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⚙ *COMBINED valise and chair, recently patented, is a helpful article in crowded stations and cars where ordinary seats are not available. A collapsible affair, the legs and back rest fold into position against and partly into the valise.*

Science News Letter, May 25, 1946

⚙ *CIGARETTE HOLDER and lighter in combination has a mouthpiece to hold the cigarette; both are then inserted into a tube with an opening in the opposite end. The flint-actuated lighter lies under and against the tube. When its ratchet is turned, a spring door opens above the flame, permitting it to reach the cigarette.*

Science News Letter, May 25, 1946

⚙ *STEERING baby carriage turns to the right or left as pressure is exerted on one end or the other of the handle bars by means of a simple arrangement of pivoted bars connected to the axles. With pressure, the rear wheels and axle turn as a unit.*

Science News Letter, May 25, 1946

⚙ *KNIFE RACK, a simple contrivance to hang on the kitchen wall, has an unbreakable plexiglas front panel. A safe repository built to hold eight knives and sharpening steel, it keeps them out of contact with each other as in the ordinary cutlery drawer, and also out of reach of children.*

Science News Letter, May 25, 1946

⚙ *TELEVISION CAMERA, that picks up action scenes and transmits them to distant motion picture screens, is now made in a lightweight portable form particularly suitable for use at football and other games. The camera and auxiliary unit shown in the picture use electronic circuits.*

Science News Letter, May 25, 1946

⚙ *PARKING PERISCOPE for automobile drivers is a three-channel conduit within the car with one end projecting beyond the rear, and the other curved downward to bring its mirror in front of the driver. The direct rear is seen through a lens on the end of the center channel; right and left of the rear are seen through the other channels by means of mirrors.*

Science News Letter, May 25, 1946

⚙ *REPEATING flashbulbs for photographers are designed to produce a minimum of 10,000 photographic flashes from a single bulb. The first unit, now available, is an AC portable, consisting of a power pack operating the electroflash bulb and an electroflash gun with reflector and flashbulb.*

Science News Letter, May 25, 1946

If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N St., N. W., Washington 6, D. C., and ask for Gadget Bulletin 312.

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Question Box

ASTRONOMY

How many eclipses have been predicted for 1946? p. 331.

How many steps are involved in the process of energy reaching the earth from the sun? p. 331.

BIOLOGY

What does the silver-spotted skipper butterfly use to solve its housing problem? p. 328.

ELECTRONICS

Name the war-developed system for determining the exact location of a lost plane or life raft at sea. p. 324.

HISTORY-BOTANY

What holiday is given primarily to thoughts of those who died for their country? p. 335.

MEDICINE

What does the new iron lung do to help cure tuberculosis patients? p. 325.

What is botulism? p. 323.

What may be one of the contributing factors to the shortage of streptomycin? p. 326.

What new remedy for hemophilia is offered? p. 323.

Why were the forty persons who offered themselves for exposure at the Bikini bomb test refused? p. 329.

NUTRITION

What happens to milk that is allowed to stand in the bottle on the doorstep? p. 331.

PHOTOGRAPHY-CHEMISTRY

What material is used to remove metallic silver from photographic hypo? p. 329.

PUBLIC HEALTH

What are the recommendations of the Committee on Engineering for fewer accidents on the highway? p. 326.

Which state shows signs of having a polio epidemic this year? p. 332.

Where published sources are used they are cited.

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